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**Inclusive financial markets: Is  
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Susan Johnson, and  
Steven Arnold

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# INCLUSIVE FINANCIAL MARKETS: IS TRANSFORMATION UNDER WAY IN KENYA?

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# **Inclusive financial markets: Is transformation under way in Kenya?**

**Susan Johnson and Steven Arnold**

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# **Inclusive financial markets: Is transformation under way in Kenya?**

**Susan Johnson and Steven Arnold**

## **Abstract**

Policy emphasis for financial sector development has shifted away from microfinance and towards the development of 'inclusive financial markets'. But for inclusion to take place, policy must address barriers to access. This paper analyses the socio-economic, demographic and geographic factors associated with financial service use across formal, semi-formal and informal financial services in Kenya between 2006 and 2009, including the new and rapidly growing mobile phone-based payments service—M-PESA. We find that, despite an expansion of services, evidence of access barriers is now clearer than it was in 2006. However, there is some evidence that M-PESA is reversing age as a barrier to inclusion, but as yet, it is more of a complement than substitute for formal services.

**Keywords:** microfinance; financial access; financial inclusion; Kenya

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## 1 Introduction

In recent years financial sector development policy has shifted away from microfinance focussed on pro-poor financial service provision to a broader agenda of financial inclusion to reach the unbanked and those on low incomes. This has been driven by two developments. First is evidence that suggests the effects of financial sector deepening on poverty is greater through indirect effects of growth and labour markets than via direct effects of employment generation through credit provision. Second, is the shift to inclusive market development approaches which embody Post-Washington consensus understandings of the role of institutions in markets and economic development. In light of this, the emphasis for financial sector development among donors has been on the growth of private sector financial service provision. This has been further spurred by information and communication technology developments—in particular in mobile phone technology—that appear to offer the potential to overcome the huge gaps in current provision that exist.

The emphasis on technology, in particular, implicitly prioritises transactions costs as the main barrier to access and anticipates that lower costs will act as a key driver towards financial inclusion. However, evidence regarding the determinants of access goes beyond income which obviously interacts with costs, to wealth and employment, age, gender, education and rural location (Bankable Frontier Associates LLC 2007; Claessens 2006; Kumar 2005). The ways in which such patterns of access are related to barriers to access is complex as these may operate through combinations of discriminatory policies, informational and contractual frameworks, pricing and product features. These patterns of access are therefore evidence of the results of these interactions and indicate the need to understand these underlying constraints. The key question for the inclusion agenda as financial service provision expands is therefore who is being reached with the services and whether barriers to access are in fact being overcome such that the financial sector is actually being transformed.

Kenya has been at the forefront of recent financial service provision developments in Africa for two main reasons. First, Equity Bank<sup>1</sup> has seen huge growth in the past few years which has made it a leader in the Kenyan market and resulted in it being seen as a role model for innovation and outreach in Africa but also globally (Napier 2010). In a three year period its customer base grew from 587,000 in 2005 to 3.3m at the end of 2008 (Stone, et al. 2010)—a rate of growth unparalleled in the Kenyan market. Both Equity and other banks have rapidly expanded their branch networks during this period also, expanding the total by 79% from 575 to 996 (Central Bank of Kenya 2006; Central Bank of Kenya 2009). The result has been growth of 20% in banking sector outreach in the last three years. Second, the development of the mobile phone-based money transfer service—M-PESA<sup>2</sup>—has registered phenomenal growth also. From its launch in 2007 to a reported customer base of over 6 million in 2009, such that over a third of adults reported having used it in the two years since its introduction (FinAccess 2009). In those two years it had developed a network of approximately 9,000 agents (Jack and

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<sup>1</sup> Equity Building Society was technically insolvent in 1993, but the regulator did not close it down. It undertook a turnaround that focused its products on the low income market and started to see rapid results. This resulted in huge growth which resulted in its transformation into a Bank in 2005 and stock market flotation in 2006 with a market capitalisation of US\$698m (Napier 2010).

<sup>2</sup> M-PESA means mobile money – Pesa is the Kiswahili word for money.



Suri 2009) compared to the bank network of 996 branches (Central Bank of Kenya 2009). These developments have been hailed as significant shifts in extending outreach with expectations that they are reaching a wider range of clients with improved access via M-PESA in rural areas. They have also created great excitement about the potential for further mobile phone based innovations to overcome barriers to access. Indeed, Porteous terms mobile-based services those that are targeted to the unbanked and offer new channels of access, “transformational” (Porteous 2006). In this context, we ask whether these new developments indeed represent a transformational shift in the Kenyan market and whether there is evidence that this expansion is overcoming barriers to access previously evident in Kenya such that characteristics previously associated with the unbanked such as employment, gender, age, education and location (Johnson and Niño-Zarazua 2011) are in fact changing.

The article draws on nationally representative surveys of financial service use carried out in Kenya in 2006 and 2009 to assess these developments. These surveys are among the first of their kind in Africa, and Kenya is one of the few countries where repeat surveys have been conducted. Moreover, their detailed coverage of both informal as well as formal and semi-formal services allows for better understanding of the role of the informal sector as change occurs.

We therefore analyse the socio-economic, demographic and geographic characteristics of users that are associated with patterns of access<sup>3</sup> on the basis that these offer evidence of underlying barriers to access. We find that factors strongly associated with bank access include employment (or main income source), education, and age, with evidence also for gender and rurality, and this is in line with other studies. These factors are also strongly associated with use of savings and credit co-operatives and microfinance institutions, although MFIs—with a strong bias to women—do reverse the negative effect of banking provision. Moreover, we find that there has been little change in these factors between 2006 and 2009. While there have been some adjustments to regional patterns of access, the 2009 regression analysis tends to give further weight to the strength of these patterns rather than suggest that these patterns are changing, though of course with some minor and interesting exceptions. This suggests that take up between 2006 and 2009 was amongst those with similar characteristics to those already using these services and hence the patterns of access have in fact become better defined. This in turn suggests that there is little that is ‘transformational’ about the current service offer of these providers.

The analysis suggests that the factors most associated with M-PESA usage are similar to those for bank use, with the key exception of age, and this is a welcome development given the youth ‘bulge’ in developing countries. However, analysing the characteristics of those who only use M-PESA does indicate some differences and suggest that it is able to reach a more diverse range of users and hence that some of these barriers to inclusion may be being overcome as the service expands further. But as a money transfer service, M-PESA is currently more of a complementary service to core banking services than a substitute. Hence a key question remains as to whether

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<sup>3</sup> In this analysis, we use the terms access and use interchangeably (CGAP 2009). This is because the distinction hinges primarily on the issue of voluntary exclusion, i.e. people may have access but not use the services through choice. While this may be a key reason for exclusion in developed countries where exclusion is overall low, this is not primarily the cause of exclusion in developing countries.

and how this complementarity can be harnessed to enhance access given that the core financial services exhibit strong entry barriers.<sup>4</sup>

## 2 Inclusive financial markets: The policy context

The shift in policy discourse to financial inclusion and away from microfinance is evident in the World Bank's 2008 publication 'Finance for All' (World Bank 2008b). This argues for the need to expand service provision towards the unbanked and those on low incomes and away from the focus of microfinance on providing financial services to poor people. This shift is supported by research that suggests that the poverty reducing effects of financial sector development on poverty reduction lie mainly through the indirect effects on growth rather than the effects of direct access for poor people to financial services (Beck, et al. 2007; Honohan 2007; Jalilian and Kirkpatrick 2005). This argument is further supported by the view that the distinction between microfinance and banking provision has been overdrawn (Honohan 2004), and also by recent shifts of microfinance provision towards individually rather than group-based products, and their transformation into regulated institutions.

The discourse shift to financial inclusion also converges with a broader move in economic development work to the development of 'inclusive markets' (Mendoza and Thelen 2008). This has particularly penetrated the field of value chain development, but is broader, incorporating financial markets also, although for some donors this is more specific about having a poverty focus (DFID 2006; DFID/SDC 2009; SIDA 2003).

With such a shift, the question arises as to the definition or causes of exclusion that underlie these approaches. Indeed, Johnson (2010) argues that there is an analytical disjuncture. The new discourse of inclusive markets picks up on the social exclusion discourse which was particularly prevalent in the 1990s in developed countries. This focused on the way people were unable to participate in what was regarded as 'normal' activity in a society—especially in labour markets or social welfare systems. In developing countries this understanding was reflected in expanded and multi-dimensional analyses of poverty such as that of the "Voices of the Poor" study (Narayan 2000) and in particular the understanding of social networks and social processes of differentiation which produced poverty. Despite this, approaches to inclusive market development are not based on this analytical understanding of how exclusion is in fact produced. Rather—and as Mendoza and Thelen (2008) also reflect—the analysis of who is excluded is based on income measures identifying those below the poverty line. Indeed, analytically, the dominant approach to the understanding of market failure and exclusion has been driven by neo-classical institutional economics with its analysis of information asymmetries and transactions costs (Dorward and Kydd 2005). These have been key to the analysis of financial market development and microfinance as an innovation has been analysed in terms of how it has contributed to overcoming these problems (Besley and Coate 1995; Stiglitz 1993).

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<sup>4</sup> Equity Bank launched a new savings account called M-KESHO (Kesho means "tomorrow" in Swahili) in early 2010, which is accessed via M-PESA. It requires that an account be opened in an Equity Branch but this can then be managed remotely, with deposits and withdrawals made via M-PESA agents. This will offer a very good test of the extent to which such technology overcomes the barriers to access and develop our understanding of what the underlying constraints to accessing bank accounts in fact are.

Beck and Demircug-Kunt (2008) distinguish between causes of involuntary exclusion from financial markets. They identify three main causes<sup>5</sup>: first, those who are excluded as a result of discriminatory policies; second, as a result of contractual and informational frameworks; and, finally, due to inadequate price and product features. However, in practice, it is difficult to distinguish between these causes of exclusion and they interact in complex ways (Claessens 2006). Moreover, discrimination is based in dimensions of social difference that may operate indirectly as well as directly. For example, for women a product feature that requires a husband's signature is a direct form of discrimination but indirectly, gender norms of mobility restrict access to the public space of a bank, or arise because women's lower incomes make bank accounts unaffordable.

The concern with developing inclusive financial markets therefore requires an understanding of the factors that might cause exclusion in the first place and in particular social difference. While income and having a formal job have been found to be strong determinants of access levels, this has led to an emphasis on reducing transactions costs, both fees and charges and forms of documentation, as the main means for improved inclusion (World Bank 2008a). However, Porteous concludes from his analysis across the Africa region that halving the costs of running an account might only provide access to some 20 per cent of those without a bank account (Bankable Frontier Associates LLC 2007).

Causes of exclusion evident from other studies also identify wealth and education, as well as income, (Claessens 2006) while Porteous (Bankable Frontier Associates LLC 2007) finds also that age, gender and poverty proxies are importantly associated with access. Rurality has been found to be strongly negatively associated with use of formal services in a number of studies, and this result is usually interpreted as implying that distance from a financial service is a key factor. This in turn has tended to suggest that overcoming access barriers is in part to do with the physical proximity of financial services since this determines costs incurred in travel and time to access the service. By contrast an earlier study on data for Kenya and Uganda (Johnson and Nino-Zarazua 2011) found that rurality was not significantly associated with reduced access.

The promise then of branchless or mobile banking for outreach and inclusion is that it takes "banking transactions out of bank branches and into retail stores in every neighbourhood and in every village" (Mas 2009:57). Mas argues that proximity is a key necessity if exchanges of cash for promises of value are to be achieved on a daily basis. For financial inclusion to take place costs must be kept low and transaction volumes as high as possible through the density and scope of transactions offered. Mas reports that technology based agent models have been most successful in Brazil where banks have used card/point of sale (POS) terminals placed in retail agents to achieve outreach, while Kenya's M-PESA services has done this through the mobile phone operator Safaricom.

Porteous (Porteous 2006) distinguishes between mobile payments which are transactions which use a mobile device such as a mobile phone, while mobile banking includes these but is where a mobile device enables access to a broader range of banking services, such as savings or transactions accounts. In the context of the need for inclusion he further distinguishes between what he calls "additive" and "transformational" models. The first offers new channels of access

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<sup>5</sup> An additional cause of involuntary exclusion is that incomes are too low or the risks of lending are too high, but they suggest that these obstacles may best be overcome via non-lending support mechanisms.

to existing bank accounts, while the latter involves a financial product linked to the mobile device which is largely targeted at the unbanked who are in the main low income people.

Mendoza and Thelen (2008) argue that interventions directed to making markets more inclusive for poor people should be assessed on three criteria. First, whether the initiative is reaching poor people on an income measure ( e.g. under \$2 per day); second, whether it has human development impact in terms of access to basic goods and services such as health, education, food, water, housing and sanitation; and, third, whether it is oriented towards achieving financial sustainability. They review a range of initiatives a number of which are mobile based financial services such as WIZZIT—a mobile-based account being offered in South Africa; alongside G-Cash and Celpay—which are mobile based payments systems operating in the Philippines and Zambia and DRC respectively. However, to date little evidence has been presented as to who is being reached by these services and whether and in what ways their transformational potential is evident whether in terms of outreach or impact. Indeed, in reviewing some of these new services, Batchelor (2008) concludes that these mobile services are more than “additive” as they go beyond the market for money transfers but that there is little evidence to date of their “transformational” contribution to inclusion.

Using Porteous’ distinction, M-PESA which was launched in March 2007, would appear to fit the “transformational” category. Its origins lay in a pilot project to see whether MFI loan repayments could be facilitated through mobile phones. However, research with users soon identified a clear need related to sending money home and this has been the core message through which it has been promoted—i.e. as a remittance service (Mas and Morawczynski 2009). After registering with an M-PESA agent, the user gets an electronic account issued by Safaricom in which they can store e-value which is denoted in units equivalent to Kenyan shillings.<sup>6</sup> The application then allows users to transfer money to others—whether registered users or not; pay bills; purchase mobile phone credit; transfer phone credit to others; and check their account balance. Deposits and withdrawals are made by visiting an M-PESA agent of whom there are now approximately 12,000 across the country, and recently withdrawals also through ATMs. Hence, this service was clearly aimed at people who did not have access to existing bank accounts and—with a maximum balance that can be held in e-value of Kshs 35,000 (approx: US\$450)<sup>7</sup> was clearly aimed at a target market not served by the banks.

A 2009 survey on M-PESA in Kenya (Government of Kenya, et al. 2009; Jack and Suri 2009) interviewed 3000 randomly selected households. Some 70 per cent of households reported having a mobile phone and 52 per cent of households had at least one bank account. Use of M-PESA was 61 per cent among banked households and 56 per cent among non-banked households.<sup>8</sup> However, user households reported annual expenditure levels which were 67 per cent higher than non-user households and asset holdings that were 21 per cent higher. Jack et al

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<sup>6</sup> See Jack and Suri (2009 and Mas and Morawczynski (2009) for background and descriptions for how M-PESA operates.

<sup>7</sup> See M-PESA tariffs available at:

[http://www.safaricom.co.ke/fileadmin/template/main/downloads/Mpesa\\_forms/14th%20Tariff%20Poster%20new.pdf](http://www.safaricom.co.ke/fileadmin/template/main/downloads/Mpesa_forms/14th%20Tariff%20Poster%20new.pdf). Accessed 15/10/10

<sup>8</sup> The FinAccess 2009 survey data which is calculated at individual rather than household level indicates that 64.3% of bank users are registered M-PESA users, while only 17.9% of those without a bank account are. 73.5% of those who had ever used M-PESA were current bank users, and 30.7% of non-bank users had ever used M-PESA. The high overlap with bank use is therefore quite evident from this data.

(Jack, et al. 2010) report that the average size of M-PESA transactions has fallen by 30 per cent since its start from an initial level of Kshs 3,000 and posit that this decline is linked to increased outreach to poorer people.

Ethnographic research into the use of M-PESA by Morawczynski (2009) has produced some rather interesting findings regarding impact which suggest that M-PESA is facilitating livelihoods through reduced vulnerability to shocks via consumption smoothing. This was particularly evident in the period of post-election violence in early 2008, when it became one of the only means through which people could access funds and the extent of usage increased two or three fold according to some agents. She reports that farmers are able to use the service to access funds during the hungry season as it gives access to a wider range of potential sources of support. A farmer reported being able to much more easily access relatives who might then “give in and send something small” (ibid: p 15)—a strategy that was not feasible before M-PESA as the funds would have been too costly to send. The service has enabled increased frequency of remitting funds from urban to rural areas which was seen as better enabling cash management, and the lowered cost and potential for increased frequency meant that overall larger amounts were being received in rural areas but the overall cost to the sender was reduced. Women also reported using the service for secret savings and to manage the funds received from informal group rotating savings and credit associations (ROSCAs), which it was easier to keep secret from husbands by storing them in M-PESA. On the other hand, the fear that an urban based husband would be hassled for funds by his wife was a reason for non-use and not giving a wife a mobile phone. Similar concerns regarding continuous demands for small amounts to urban dwellers from their rural relatives, had led in one case to abandoning use. While some found it difficult to use, others thought it was for rich people, and some experiences of not being able to withdraw money from agents had also led to non-use.

The shift of discourse to inclusive financial market development needs to be set alongside the evidence to date which demonstrates patterns of access in access to financial services associated with socio-economic, demographic and geographic factors. This suggests that charting the route to financial inclusion must incorporate analysis of the ways these factors interact with provision to create barriers to access for users. Such analysis may only be broadly indicative of underlying barriers to access as these can be caused by the complex interaction of discrimination, informational asymmetries, and price and product characteristics. However, the transformational potential of new technologies will best be supported if their contribution to overcoming these barriers to access is in fact understood. This therefore suggests the need to start with analysis of changing market provision to assess who is being included and hence how these dynamics are being played out.

### 3 Methodology

The analysis of financial service use in developing countries has in the past been mainly based on supply side data from banks on numbers of bank accounts (see, for example, (CGAP 2009; World Bank 2008a). Few nationally representative surveys exist which offer a detailed picture of financial service use across the formal, semi-formal and informal sectors, especially in Africa. In 2002, the FinMark Trust in South Africa initiated a survey to capture this which has since been

replicated and adapted to 14 sub-Saharan African countries and Pakistan.<sup>9</sup> A number of these countries have now undertaken a second round survey giving the opportunity for dynamic comparisons.

In Kenya, the first such FinAccess Kenya survey was carried out in 2006 and repeated again in 2009 supported by a coalition of public and private agencies with the main financial support coming from Financial Sector Deepening Trust, Kenya, which is itself supported by a coalition of donors. The survey was conducted by a market research company, The Steadman Group, in 2006 and 2009. In 2006 it comprised a nationally representative sample of 4418 observations of which 4214 were used in the analysis—those respondents aged over 18. In 2009 the sample was of 6598, of whom 6343 respondents were over 18. In both cases the sample frame was provided by the national statistical office—Kenya National Bureau of Statistics—based on their national sampling frame and given household and individual weights to arrive at proportions of the adult population (for details see (FinAccess 2007)).

The analysis here investigates the socio-economic, demographic and geographic determinants of the use of formal, semi-formal and informal financial services using variables available in the dataset. Unfortunately some dimensions of social difference that would be interesting to include in the analysis are not available in the dataset, such as, ethnicity, race and religion. We use Probit regression techniques to establish which socio-economic, geographic and demographic characteristics are most associated with people's access to key categories of service provider. For this we have focussed the analysis on Banks, savings and credit co-operatives (SACCOs), microfinance institutions (MFIs) as the main categories of formal and semi-formal service, and ROSCAs as the most used informal service. For this analysis we have also combined savings or credit use to examine overall use of a service—the savings and credit proportions are given in Table 1.<sup>10</sup> In discussing the results we refer to the effect that a characteristic has on the probability that a service is used—this is always relative to a base category for each variable. Hence the regression results—which produce marginal effects—indicate the increased or decreased probability that a person with a particular characteristic uses the service compared to someone with the base characteristic.<sup>11</sup>

The dataset for the 2009 survey included a variable for cash expenditure which was not included in the 2006 survey.<sup>12</sup> However the data collected in 2009 does not allow for the estimation of an individual's position relative to national poverty lines because the data collected did not allow for the value of own-consumption.<sup>13</sup> This means that it is not possible to directly relate access to

<sup>9</sup> See Finscope website: <http://www.finscope.co.za>

<sup>10</sup> Initial analysis of savings and credit services separately demonstrated that the factors associated with use on the savings side were key to the analysis and analysis of the credit side separately did not reveal factors that were not important on the savings side. In any case there is huge overlap and it is rare that people take credit who do not also save in an institution.

<sup>11</sup> The selection of the base case is usually undertaken on the basis of a sufficiently sized sub-sample (ie avoiding the smallest sub-samples) and for logical coherence (eg the youngest age group, or least educated). It does not affect the significance of the results relative to each other, however the interpretation is relative to the base case and this must be born in mind at all times.

<sup>12</sup> The survey question was how individuals spend their money, so it has to be assumed that this was interpreted as the individual's own expenditure, and not household expenditure, so reflecting the funds an individual has at his/her disposal.

<sup>13</sup> Since a high proportion of households may grow food which they themselves consume, data collected on cash expenditure alone will underestimate their standard of living relative to a national poverty line

an income or consumption poverty measure. However, we have included this variable in the regression analysis since it is obvious that levels of cash flow are likely to influence financial service use and this goes some way to addressing the effects of income on access that were not captured and could not be analysed for the 2006 survey.

We therefore report and discuss probit regressions based on two main models. First, a model (Model 1) that could be run on the 2006 and 2009 data which uses poverty proxies involving key assets of housing and consumer durables. We have then tested the hypothesis that the coefficients of the 2006 and 2009 equations are the same using the Chow test. Where this is rejected, significance is indicated in the following column of Table 2. Second, for 2009 data we report a second model (Model 2) which includes the cash expenditure variable that was available in order to test whether the inclusion of this variable affects the main findings regarding factors associated with use.

By comparison to the 2006 survey, the 2009 dataset also collected more robust indicators regarding the distance to a bank. In 2006 this was confined to the respondents own subjective assessment of how far they were from a bank. In the 2009 dataset there is data on mode of transport, time and cost involved in getting to the nearest bank. In modelling the use of banks, we have therefore used this data to construct variables for distance which is an improvement on the accuracy of the 2006 data and enables us to better understand the influence of this factor (see Models 3 and 4, in Table 2).

Finally, since M-PESA was introduced in 2007, we assess the factors associated with its use only on the 2009 data.

## **4 The Kenyan retail financial market, 2006-2009**

This section presents an overview of the financial services on offer in the market and reviews the key changes in use of particular financial services between 2006 and 2009. The macro-economic context of these developments was that GDP growth was running at 5-7% p.a from 2004 to 2007 but slumped to 1.5% in 2008 in the wake of the post-election violence of early 2008 recovering to 2.6% in 2009. Per capita GDP growth peaked at 4.3% in 2007 and turned negative at -1% in 2008 and zero in 2009. Kenya's growth has historically been strongly agriculturally dependent, however, growth in agricultural value added in 2006-9 fell away from a very strong year in 2005 of 6.9% to a negative rate of -4% p.a. in 2008 and remaining negative at -2% in 2009 (World Bank 2011). Hence the period under study saw a significant slow down in economic activity which could be expected to effect increasing outreach. However, M-PESA grew rapidly despite this and the post-election violence and the displacement that ensued may well have contributed to this as the need to send funds increased.

Table 1 reports the percentage of the population using each type of financial provider for savings, loans and for either (the overall figure). Bank use has risen from 17.8% to 21.5%—approximately a 20% expansion in the sector's outreach over three years. This has been strongly related to the expansion of Equity Bank which has expanded its customer base from 0.5m

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compared to households who are dependent on buying their food. The standard methodology is to include an estimate of the value of produce that a household has consumed from its own production, but this was not done in this survey.



accounts to 3.3m between end 2005 and end 2008.<sup>14</sup> This alone accounted for an increased proportion of its own outreach in the population of 8.7 percentage points from some 3.6% to 12.3% of the population (Stone, et al. 2010). The key driver of this shift has been a shift to charging per transaction (withdrawal) rather than a requirement for a minimum balance to be held in the account and this has proved much more transparent and appealing to customers.<sup>15</sup> However, the implication of these figures is that many people have switched to Equity or may now hold accounts in more than one bank. At the same time, the use of PostBank which is a parastatal savings bank and was previously a key player in providing savings accounts, has halved, in part due to its previously slow and cumbersome service compared to increased automation elsewhere although it has now introduced a card based system.

**Table 1: Financial service use (per cent of adult population currently using)**

	2006			2009		
	Savings/ Transactions	Loans	Overall	Savings/ Transactions	Loans	Overall
Bank/building society	13.7	2.1	} 17.8 <sup>16</sup>	20.4	3.3	} 21.5
PostBank	5.6	--		2.5	--	
SACCO	12.8	4.1	13.1	8.9	3.0	9.0
M-PESA registered	--	--	--	27.9	--	27.9
MFI	1.5	0.8	1.7	3.2	1.8	3.4
ROSCA <sup>17</sup>	29.3	--	29.3	31.7	--	31.7
ASCA	5.4	1.7	5.7	7.8	1.8	8.0
Local shop	--	22.8	22.8	--	24.3	24.3
Family or friend	5.7	12.6	17.5	6.7	12.2	17.5
Group of friends	10.9	--	10.9	5.5	--	5.5
Government	--	1.1	1.1	--	0.3	0.3
Employer	--	0.9	0.9	--	0.5	0.5
Buyer	--	0.9	0.9	--	1.2	1.2
Informal moneylender	--	0.7	0.7	--	0.4	0.4

Source: FinAccess 2006 and 2009

Savings and Credit Cooperatives are a key feature of the Kenyan financial landscape and are usually based on a common bond of employment or cash-crop production (ie tea, coffee, dairy producers). For these use has fallen significantly for both savings and loans—from 13.1% to 9%, although retaining a ratio between borrowers and savers of a third. While we do not have clear evidence that this fall in use has been a result of a shift of users to the banking sector, this would not be surprising.<sup>18</sup>

<sup>14</sup> By end 2009 this had increased to 4m depositors and 0.7m borrowers.

<sup>15</sup> Previously, the application of monthly fees to account balances could result in a situation where, having deposited funds, a customer could return a few months later and find they had nothing left!

<sup>16</sup> This figure combines all banks and building societies, including PostBank.

<sup>17</sup> We report ROSCA's only on the savings side as the FinAccess questionnaire treats ROSCAs as a savings service and the figure for taking credit would be exactly the same as for savings as all members received the pot during the round.

<sup>18</sup> Moreover, Equity Bank had a marketing campaign which focused on "membership" of the bank, which targeted a key aspect of the relationship that users have with SACCOs.



The biggest change to the financial landscape over the period has been the introduction of the M-PESA money transfer service. According to the FinAccess survey, by early 2009, 27.9% of the population over 18 were registered M-PESA users—approximately 5.2 million people—and a further 13% reported themselves to be non-registered users, hence some 39.3% (of over 18s) reported having ‘ever used’ M-PESA. People may use it by sending or receiving funds through the phone of another and do not have to be registered to receive funds. 5.2% of registered users and 51.6% of non-registered users reported having access to a phone rather than owning one. Morawczynski reports the existence of “M-PESA boys” in Western Kenya who charge a commission for conducting transactions on behalf of others (Morawczynski 2009). As M-PESA is technically a money transfer service, it does not entirely fit the profile of other savings services although evidence suggests that users are keeping funds on their phones as a safe way to store money. While research suggests (Government of Kenya, et al. 2009) that storing money in M-PESA does make it a form of savings service rather than purely for money transfer with some 75% of their (mainly user) sample storing money in this mechanism, only 21% reported that it was their most important service. A similar question in the FinAccess 2009 survey indicates that 10.5% of the population have used M-PESA to save money.

The use of microfinance institutions has doubled from 1.7% to 3.4%, hence from a rather low base and still presents a rather small proportion of the market as a whole. A Microfinance Act was passed in 2006 and regulations finalised in 2008 which enabled Faulu Kenya to become the first MFI to register under the Act as a deposit taking institution in May 2009 (after the survey date)—followed by Kenya Women Finance Trust (KWFT) in 2010. Both of these institutions underwent rapid growth over the three years between the surveys, Faulu from 31,000 to 92,000 clients and KWFT from some 62,000 clients to 242,000 (Stone, et al. 2010).<sup>19</sup>

Rotating savings and credit associations (ROSCAs) and accumulating savings and credit associations (ASCAs) are informal group-based systems of financial intermediation and dominate the informal financial landscape in Kenya. ROSCAs involve contributions to a pot which is distributed to a member(s) as soon as contributions are made with the allocation system being based on social status, drawing lots or other systems of social preferment.<sup>20</sup> ASCAs on the other hand involve contributing to a central pot from which loans are taken at interest, so enabling the central pot to grow. Table 1 shows that ROSCA use has also risen from 29.9% to 31.7% while ASCA use has risen from 5.7% to 8.0%.

Use of local shops for goods on credit has risen—and this might also be interpreted in relation to the relatively tougher macro-economic conditions of Kenya in early 2009 compared to 2006.<sup>21</sup> Other services are little used and differences in these are less likely to be robust as samples of users in both surveys were rather small.

Respondents may also use more than one type of service, combining use in order to get a service mix that meets their needs. In 2009, some 8.6% were using a bank alongside an informal ROSCA, i.e. some 40% of bank users, suggesting that banks do not obviate the usefulness of informal

<sup>19</sup> One of the earliest MFIs – to establish itself - K-REP - converted to a bank in 1999 and hence falls under the banking sector.

<sup>20</sup> Bidding ROSCAs are common in some parts of the world but not in Kenya.

<sup>21</sup> CBK Monthly Economic Review figures (January 2010) indicate that GDP growth fell back to 1.69% in 2008 (latest year for which figures are available) compared to 6.32% in 2006 and 7.1% in 2007. People are more likely to take goods on credit from local shops when they are facing hard times.

services. Some 13.8% of the population reported both a bank account and M-PESA registration. At almost two-thirds of bank outreach this is a high level of overlap. However, some 5.8% were only using M-PESA while another 6.6% were using it alongside an informal service—mainly either a ROSCA or ASCA. Hence this suggests that some 12.4% of the population may have been using a more formal service for the first time.

So with this dramatic expansion of M-PESA services and modest expansion of bank services, but in the face of falling SACCO use, some growth in MFI use and slight increase in ROSCA use, the key question that arises is whether the main determinants of access to these services have changed. In the next section, we discuss each of the factors associated with access across the main services before analysing patterns of use of M-PESA.

## 5 Analysis

We order our discussion of the factors associated with access by their strength of influence across the main services.

### 5.1 Employment

Overall, service use is strongly associated with patterns of employment. For banks, employment or main income source was strongly associated with bank use in 2006 (see Table 1). In particular, 64% of government employees used a bank account (usually to receive their salaries) and this association gives a positive and highly significant increased marginal effect on bank use of 40% compared to those whose main income was farming or fishing (only 8% of whom had a bank account). Employment in the private sector<sup>22</sup> was associated with a positive marginal effect of 13%. By contrast those employed on domestic chores were 8% less likely and those who relied on pensions/transfers from others were 6% less likely. Overall this pattern of access associated with employment has not changed and reflects the importance of formal employment leading to salary receipt through banks for bank access.

Turning to Table 3, employment is also the strongest influence on using SACCOs in 2006, and this pattern has remained in 2009, with being a government employee rather than farming or fishing being most associated with increased probabilities of SACCO use. Being dependent on transfers, employed in agriculture or domestic chores, or having your own business were still factors associated with reduced probabilities of holding a SACCO account relative to those self-employed in farming or fishing. This again reflects the role of salary receipt through this route in access and that more informal sources of employment reduce the likelihood of access.

For MFIs, it is perhaps surprising that their association with running one's own business did not register in 2006 given that MFIs have generally targeted people running small businesses. The coefficients in this regression are lower than other services because the overall proportion using the service is low hence reducing the probabilities related to particular variables. However, there are some significant negative associations of use with being dependent on pensions or transfers, or employed in agriculture compared to own-account farming and fishing. However, intriguingly analysis shows that some 10% of those employed in government are using MFIs and this likely reflects both the fact that government employees—especially teachers—often have businesses

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<sup>22</sup> The data set does not enable us to breakdown this employment into formal and informal employment.

Table 2: Bank use, probit regression results

Column	(1)	(2)	(3)	(4)	(5)	(6)
	2006	2009	Chow	2009	2009	2009
	Model 1	Model 1	Test	Model 2	Model 3	Model 4
VARIABLES	S_Banked	D_usebank	Model 1	D_usebank	D_usebank	D_usebank
Rural	-0.010	-0.050 ***		-0.034 **		
Banknotfar					0.017	
Bankfar					0.007	
Bankveryfar					-0.029	
Bank - 10-30mins						0.006
Bank - 30-60mins						-0.017
Bank - >60mins						-0.055 ***
Female	-0.018	-0.022 **		-0.022 *	-0.023 **	-0.022 *
Single	0.011	-0.019		-0.004	-0.005	-0.006
Divorced	0.011	0.013		0.030	0.031	0.032
Widowed	0.004	0.034 *		0.055 ***	0.056 ***	0.058 ***
Age Exact	0.010 ***	0.011 ***		0.008 ***	0.008 ***	0.009 ***
Age Squared	-0.000 ***	-0.000 ***		0 ***	0 ***	-0.000 ***
Educ - primary	0.064 ***	0.085 ***		0.08 ***	0.076 ***	0.083 ***
Educ - secondary	0.165 ***	0.238 ***		0.209 ***	0.204 ***	0.214 ***
Region - Central	0.055 **	0.035		0.055 **	0.032	0.034 *
Region - Coast	-0.025	-0.056 ***		-0.051 ***	-0.059 ***	-0.059 ***
Region - East	0.023	-0.051 **	++	-0.031	-0.045 **	-0.034
Region - NE		-0.100 ***		-0.09 ***	-0.086 **	-0.095 ***
Region - Nyanza	-0.013	-0.070 ***	+	-0.065 ***	-0.076 ***	-0.079 ***
Region - Rift	0.019	-0.038 **	+	-0.019	-0.03 *	-0.028
Region - West	-0.046 *	-0.023		-0.003	-0.020	-0.018
Income - transfer	-0.061 ***	-0.075 ***		-0.07 ***	-0.065 ***	-0.074 ***
Income - empl agric	-0.040	-0.076 ***		-0.077 ***	-0.076 ***	-0.083 ***
Income - domestic	-0.083 ***	-0.115 ***		-0.096 ***	-0.093 ***	-0.103 ***
Income - govt	0.396 ***	0.432 ***		0.381 ***	0.386 ***	0.393 ***
Income - pvt sector	0.126 ***	0.139 ***		0.122 ***	0.131 ***	0.128 ***
Income - own business	0.037 **	0.040 **		0.033 **	0.041 ***	0.039 **
Income - inv/sublet	0.030	0.051		0.033	0.049	0.043
Housing - permanent	0.055 **	0.100 ***		0.08 ***	0.08 ***	0.080 ***
Housing - semipermanent	0.011	0.043		0.042	0.039	0.040
Housing - traditional	-0.045	0.001		-0.004	-0.006	-0.006
Radio	0.055 ***	0.059 ***		0.055 ***	0.054 ***	0.055 ***
TV	0.095 ***	0.087 ***		0.065 ***	0.067 ***	0.069 ***
Bicycle	0.010	0.014		0.009	0.006	0.007
Car	0.160 ***	0.145 ***		0.078 ***	0.074 ***	0.082 ***
Own phone	0.143 ***	0.219 ***	++	0.185 ***	0.184 ***	0.185 ***
Access phone	-0.009	0.053 **	++	0.041 *	0.041 *	0.032
Log expenditure				0.073 ***	0.074 ***	0.076 ***
Observations	4084	6315		6315	6315	6081
Pseudo R <sup>2</sup>	0.3842	0.3713		0.3888	0.389	0.3819

Note: base categories for categorical variables are as follows: Urban; Bank near; Bank 0-30mins; Male; Married; No education; Province – Nairobi; Income – sale of own produce from farming and fishing; Housing – temporary; No phone

Table 3: SACCO, MFI, and ROSCA use, probit regression results

VARIABLES	(1) 2006 Model 1 SACC O	(2) 2009 Model 1 SACC O	(3) Chow test Model 1	(4) 2009 Model 2 SACC O	(5) 2006 Model 1 MFI	(6) 2009 Model 1 MFI	(7) Chow test Model 5	(8) 2009 Model 2 MFI	(9) 2006 Model 1 ROSC A	(10) 2009 Model 1 ROSC A	(11) Chow test Model 9	(12) 2009 Model 2 ROSC A
Rural	0.040 **	0.025 *	**	0.028 *	-0.005	0.005 **	++	0.006 *	0.013 **	-0.015 **		-0.006 **
Female	-0.011	-0.021 *		-0.021 *	0.005 **	0.016 *	++	0.015 *	0.169 *	0.224 *	++	0.225 *
Single	-0.027 **	-0.014		-0.010	0.000	-0.008 *	+	-0.007 **	-0.081 *	-0.098 *		-0.09 *
Divorced	-0.029	-0.027 **		-0.023 *	-0.004	-0.003		-0.002	-0.026	-0.049		-0.040
Widowed	-0.024 **	0.005	++	0.010	0.004	-0.002		-0.001	0.041	-0.005		0.005
Age Exact	0.007 *	0.006 *		0.005 *	0.001 **	0.003 *		0.003 *	0.008 *	0.012 *		0.01 *
Age Squared	-0.000 **	-0.000 *		0	-0.000 **	-0.000 *		0	-0.000 *	-0.000 *		0
Educ - primary	0.050 *	0.014	+	0.013	0.022 **	0.002	++	0.002	0.050 **	0.109 *	+	0.106 *
Educ - secondary	0.083 *	0.053 *		0.044 *	0.038 *	0.014 **	+	0.012 **	0.050 *	0.093 *		0.081 *
Region - Central	0.082 **	0.091 *		0.103 *	0.004	0.002		0.004	0.080 **	0.060 **		0.069 **
Region - Coast	-0.061 *	-0.024 *	++	-0.019	0.015 *	0.034 *		0.036 *	-0.115 *	0.006	+++	0.010
Region - East	0.007	0.022		0.032 **	0.002	0.012 *		0.014 **	0.044 **	0.181 *	+++	0.194 **
Region - NE									-0.281 *	-0.238 *		-0.234 *
Region - Nyanza	0.005	0.001		0.005	0.001	0.009 **		0.010	0.062 *	0.074 **		0.08 *
Region - Rift	-0.001	0.012		0.019	0.014 **	0.034 *		0.037 *	-0.058 *	0.011	+	0.023
Region - West	-0.037 **	0.004	+	0.012	0.008	0.015 **		0.018 **	-0.015 **	0.073 **	+	0.087 **
Income - transfer	-0.068 *	-0.057 *		-0.055 *	-0.011 *	-0.004	++	-0.004	-0.115 *	-0.125 *		-0.123 *
Income - empl agric	-0.033 **	-0.033 *		-0.033 *	-0.007	-0.010 *		-0.01 *	-0.041 **	-0.085 *		-0.084 *
Income - domestic	-0.056 *	-0.052 *		-0.049 *	-0.006	-0.003		-0.002	-0.125 *	-0.068 *		-0.055

VARIABLES	(1) 2006 Model 1 SACC O	(2) 2009 Model 1 SACC O	(3) Chow test Model 1	(4) 2009 Model 2 SACC O	(5) 2006 Model 1 MFI	(6) 2009 Model 1 MFI	(7) Chow test Model 5	(8) 2009 Model 2 MFI	(9) 2006 Model 1 ROSC A	(10) 2009 Model 1 ROSC A	(11) Chow test Model 9	(12) 2009 Model 2 ROSC A
Income - govt	0.281 **	0.336 *		0.306 *	-0.003	-0.003		-0.004	-0.018	-0.052		-0.068 *
Income - pvt sector	0.038 **	0.020 *		0.016	-0.005	-0.002		-0.003	-0.001	0.010		0.003
Income - own business	-0.046 *	-0.042 *		-0.042 *	0.004	0.011 *		0.01 *	0.059 *	0.068 *		0.066 *
Income - inv/sublet	-0.015	-0.003		-0.004	0.016	-0.003		-0.003	0.056	-0.110 **	++	-0.113 **
Housing - permanent	0.030	0.104 *	++	0.096 *	0.002	0.001		0.000	0.061 *	-0.090 *	+++	-0.101 *
Housing - semipermanent	0.019	0.084 *	++	0.083 *	0.001	-0.004		-0.004	0.063 **	-0.056 **	+++	-0.059 **
Housing - traditional	-0.040 **	0.051	++	0.049	-0.001	-0.007		-0.007	-0.013 **	-0.074 **		-0.077 **
Radio	0.024 **	0.021 **		0.019 **	0.004	0.007 **		0.007 **	0.061 *	0.040 **		0.036 **
TV	0.036 *	0.022 *		0.016 **	0.003	0.005 *		0.004	-0.020 **	0.029 *	+	0.020 **
Bicycle	-0.012	-0.006		-0.008	-0.000	0.005 **		0.005 *	0.047 *	0.066 *		0.063 *
Car	0.007	0.032 **		0.010	0.000	0.004 **		0.001	-0.044	-0.091 **		-0.118 **
Own phone	0.021 *	0.033 *		0.025 **	0.009 **	0.032 *	++	0.029 *	0.051 **	0.163 *	+++	0.145 *
Access phone	-0.000	0.022 **		0.018 **	0.004	0.019 **		0.018 **	0.025	0.090 *	++	0.083 *
Log expenditure				0.019 *				0.004 *				0.038 *
Observations	4084	5984		5984	4084	5984		5984	4214	6315		6315
Pseudo R2	0.267	0.2792		0.286	0.151	0.1964		0.201	0.0969	0.1321		0.135

as well and it may also reflect the expansion of MFI services to salary loans and related products, again seeking a market of stable salaried employees.

The employment types that are associated with ROSCA use are similar to those for MFIs in that having your own business produces the highest positive marginal effect. Unsurprisingly those with low and more unstable income sources: being dependent on transfers; employed in agriculture or domestic work or investment income produce negative marginal effects by comparison to self-employed farming and fishing.

## 5.2 Education

For banks, higher levels of education were very strongly associated with the increased probability of bank use in 2006. Having a secondary education rather than no education has the second largest positive marginal effect use (+24%), while primary education also has a positive association (+8%). These effects remained very strong in 2009.

For SACCOs, the influence of secondary education is strongly positive, but the Chow test suggests that the positive effect of primary education in 2006 has now gone and this might reflect that in the context of falling use it is the less educated who have tended to leave.

Very surprisingly, MFI use was strongly significantly associated with secondary education in 2006, and primary education also registered increased probability suggesting that MFIs were not doing a particularly good job at reaching out to the less educated. However, this is an area that according to the Chow test, has changed with the significance of secondary education reducing and primary education no longer being significant at all. This is a particularly welcome, if overdue, development.

Equally it is rather surprising that in 2006 both primary and secondary education were positively and significantly associated with ROSCA use. For 2009, the marginal effects have practically doubled for both variables and the association with primary education has changed according to the Chow test, while the secondary association is confirmed. This in fact suggests a widening of the gap between those with primary education and those with no education and is rather disappointing if access to such services is seen as a route towards increased financial access for the less educated, due to their relative simplicity.

## 5.3 Age

In 2006 age was an important influence on bank use, and older people were much more likely to use a bank account than younger people. Although the mean age of bank users has fallen from 39 years in 2006 to 37 years in 2009, this compares to a mean for the population of 36 years so that the influence of age is still strongly positive. This can be understood as a result of the likelihood that older people are likely to have at some point in their life opened a bank account and are then more likely to have retained one.

Similarly to bank use, age also has a positive and significant effect on SACCO, MFI and ROSCA use. Again we can suggest that there is a cumulative effect over time for older people of gaining access to SACCOs or demonstrating the ability to operate in ROSCAs. MFI use has also in the past been associated with use by women in their mid-30s who are able to develop businesses. But these strong associations with age suggest that there may be barriers to entry for young people in particular.

## 5.4 Assets and expenditure

We expect that those with stronger asset profiles are more likely to use banks and other financial services and overall these effects seem to have strengthened somewhat between 2006 and 2009. For 2009 we included an expenditure variable and we also find this significant for all services, though surprisingly this coefficient is larger for ROSCAs than SACCOs and MFIs.

Bank use is positively associated with permanent housing, having a car, radio, TV, or mobile phone. The strength of association with own phone or having access to one have both strengthened, with the latter becoming positive in 2009. For SACCOs, having a TV, radio or mobile phone were positively associated with use in 2006 and having a car or access to a phone has become so in 2009, and the Chow test suggests these have not changed. Meanwhile, all forms of housing type have positive associations with use compared to temporary housing: a factor that suggests a widened gap in 2009.

In 2006 we found that owning a mobile phone was associated with a more than doubled probability of using an MFI compared to not using one at all, and we find a similarly strong association with this variable in 2009. But this may be the result of reverse causation in which MFI loans are used to buy phones. Associations with asset ownership appear to have strengthened in 2009 compared to 2006, with radio, TV and bicycle ownership registering very small but significant effects, however it is only phone ownership that registers a strong positive change according to the Chow test.

For ROSCAs, the Chow test suggests there are significant changes in the coefficients for permanent and semi-permanent housing relative to temporary housing, with them becoming negative but this is not intuitively explicable. The marginal effect associated with having your own mobile phone has increased significantly as it has also for having access to a phone. It may again be that causality is reversed in such a case with the purchase of mobile phones—which have hugely expanded in prevalence—being facilitated by having a ROSCA to save up the now quite small lump sum needed.

Model 2 in Tables 2 and 3 includes the expenditure variable and this was strongly positively related to use of bank services in 2009, as is expected. However, the inclusion of this variable has not affected the overall ordering and importance of the key associations for the bank use variable although it slightly reduces the significance of rurality and gender suggesting that lower incomes were correlated with these variables in the 2006 specification.

Expenditure level is also positively associated with SACCO, MFI and ROSCA use, but while this influence is approximately half as large for ROSCAs as for banks, it is surprisingly higher for ROSCAs than for SACCOs and MFIs, so suggesting that informal services may not be as poverty focussed as tends to be assumed.

## 5.5 Geographical factors: Rurality and province

Turning to the urban—rural divide, the evidence suggests that the expansion of bank services has not overcome a negative association with rurality, and that distance is only relevant when journey times are more than one hour.

The expansion of bank use since 2006 has been much greater in urban than rural areas: from 29.5% of urban residents to 39.6% compared to an increase from 13.1% to 16.6% of rural

residents. The regression analysis in Table 1 (model 1) shows that rural location is associated with a negative and significant marginal effect of 5% on the probability of rural people using banks compared to those in urban areas and this contrasts with the finding in 2006 when rural location was neither negative nor significant. The Chow test (Table 2, column 3) suggests that the coefficients for the two regressions have not changed and hence, we can interpret the significance of the 2009 coefficient as giving greater confidence that the effect of rurality is indeed negative.<sup>23</sup> This is also robust to the inclusion of the expenditure variable in model 2.

In 2006, as well as rurality not being significant—which contrasted with findings of other studies (Johnson and Nino-Zarazua 2011), it was also found that access was not significantly associated with a subjective distance variable.<sup>24</sup> In 2009 we have been able to examine the association of bank use with two distance variables—one based on cost of getting to the nearest bank and the other based on time required to travel there.<sup>25</sup> Model 3 in Table 2 which uses levels of cost to construct the distance variable suggests that there was no significant relationship between the cost of travelling to the bank and its use. However, Model 4 in Table 2 uses time to travel to the bank—regardless of mode of transport—and indicates that use was significantly lower for those travelling more than an hour to get to a bank. According to the survey 25% of the population reported living more than an hour's journey time from the bank. Hence this work finds that distance is likely to be a key factor in determining access beyond this point and that for the majority who live within an hour's journey time it is other socio-economic and demographic factors that are likely to be more important determinants. This is an interesting finding since distance is regularly cited as a key barrier to access and yet the importance of other factors is greater for those closest to the bank.

For SACCOs, despite the trend decline in use, the stronger association with rural relative to urban use remained. This can be explained by the fact that rural SACCOs are more likely to be cash-crop based, whereas those in urban areas using them are likely to belong to employee based SACCOs and it is these that have probably suffered the greatest competition from the banking expansion as the banks become more competitive routes through which to receive salaries.

For MFI use, the Chow test now registers a changed coefficient for rurality although it was significant in neither year in 2006 although the proportion of urban residents using MFIs (2.4%) was higher than that of rural residents (1.5%) in 2006, but this is now much more even at 3.5% and 3.4% in 2009 reflecting a quite strong expansion of MFI outreach to rural areas.

However, while ROSCAs have tended to be viewed as a more rural than urban phenomenon this difference is rather surprisingly not apparent in the marginal effects derived here. There has in fact been a big increase in urban use rising from 26.2% to 32.7% which has overtaken rural use which rose from 29.8% to 31.4%.

The patterns of association between use of services and Provinces, is one that has changed somewhat compared to 2006. For banks, the lower probabilities of use compared to the base

<sup>23</sup> This can be explained by the larger sample size for the 2009 survey giving, *ceteris paribus*, smaller standard errors and hence greater confidence in coefficient estimates.

<sup>24</sup> The variable used for distance in 2006 was a subjective assessment by the respondent of very near; near; far; very far.

<sup>25</sup> These distance indicators were used independent of the mode of transport.



case of Nairobi are all now significant where they were not in 2006. This change in regional patterns suggests that as services have expanded the rate has not been even across Provinces and hence the relative exclusion for those in Eastern, Nyanza and Rift Valley relative to those in Nairobi has increased.

For SACCOs, regional differences have remained but with some changes in associations for Coast Province—showing an increase—and Western Province losing its negative association. For MFIs, the changes in association with regional Provincial coverage do not appear significant according to the Chow test but probabilities for Coast, Eastern, Western and Rift Valley Provinces have increased both in degree and significance and these are all relative to Nairobi, suggesting that now people in these Provinces are now more likely to use MFIs than those in Nairobi. This, similarly to the trend with banks, appear to suggest a shifting profile of outreach alongside service expansion.

The pattern of Provincial coverage for ROSCAs has however seen some interesting changes. In 2006 those located in Central Province were more likely to use these services than those in Nairobi and those in Coast were much less likely to use them. The Chow test suggests that the shift from a negative marginal probability of 11% to a slight positive is significant, as is the much higher probability of their use in Eastern Province. In the North Eastern Province the association with use is highly negative and this has not changed. North Eastern Province has a predominantly pastoral economy and low population densities. The directions of marginal effects appear to have changed for Rift and Western also. These results seem to suggest that ROSCAs have taken more of a hold as a financial service in parts of the country where they were previously much less used and suggests an interesting dissemination of this technology.

## 5.6 Gender

Patterns of association with gender are now clearer than they were in 2006 and for MFIs and ROSCAs in particular have strengthened significantly.

In 2006, 13.3% of women compared to 22.6% of men used a bank account, but being a woman—while having a negative marginal effect—was not associated with a significantly lower likelihood of bank access. Since 2006, the proportion using bank accounts has increased in line with the overall average for both genders. However, rather than reducing the negative association of being female with bank use, this has now become significant and remains so across all specifications. The Chow test, again suggests that these coefficients have not changed, which can again be interpreted that we can now have greater confidence in the 2009 coefficient as having a negative influence. While the negative association is as might be expected it is surprising that it has strengthened in spite of proportionate increases in use by both genders.

In 2006, SACCO use for women had a negative coefficient but this was not significant. However a negative bias towards women's use appears in 2009 despite the fact that proportion of men using them fell more than it did for women. The fact that the Chow tests suggests there is no change in the coefficient suggests we can be more confident that this influence was indeed negative in 2006 also. This tends to reflect men's greater ownership of cash-crops in particular.

Given that many MFI services have been targeted to women we would expect to find that gender is a significant variable and this is indeed the case. However this effect is small but according to the Chow test has increased in strength between 2006 and 2009, suggesting that

the expansion of MFI services has been further biased towards women. This is likely to be related to the growth of KWFT which with an exclusive focus on women has been one of the fastest growing in the sector.

Similarly, the use of ROSCAs has long been associated with women in Kenya (Johnson 2004a; Kimuyu 1999) and has been explained in relation to their income and expenditure flows as well as norms of socialisation. The regression shows that this was one of the highest marginal effects in 2006 and interestingly has strengthened in 2009 and is also significant change according to the Chow test. The explanation for this strengthened effect may lie in reduced levels of use by men rather than higher levels by women. It is not very clear why men should particularly have reduced their use of these services, except that this may have arisen as a result of post-election violence with women potentially being more adaptable to starting new ROSCAs than men even where they were displaced.

## 5.7 Conclusions

Overall, we find that having stable and secure employment especially with government or the private sector is more strongly associated with the use of banks and SACCOs, while MFIs and ROSCAs are associated with running own businesses, and in this way filling a gap. Those on more unstable and insecure incomes—in particular those dependent on transfers, employment in agriculture or domestic work—are much less likely to have access to even informal services in the form of ROSCAs.

Higher education is also strongly associated with bank and SACCO use—and particularly surprisingly this is true of ROSCAs also, though MFI use seems to have reduced this association since 2006. Age is also positively associated with use across the board and this highlights the exclusion of young people. While, as we would expect, stronger asset ownership profiles are associated with use of banks and SACCOs, MFI and ROSCA associations with mobile phone ownership may be a sign of reverse causality. Rather surprisingly, the association with the log of expenditure has a stronger effect for ROSCAs than SACCOs and MFIs.

The findings on bank use and rurality are as expected, but those on distance suggest that this only becomes important once journey times extend over an hour and hence this applies to only about 25% of the population, suggesting that for the remaining 75% it is more likely to be other socio-economic or demographic characteristics that create constraints. It is particularly surprising that ROSCAs appear to have become as much an urban as a rural phenomenon.

Gendered barriers to access have become more evident across all services: banks and SACCOs are more likely to be used by men, while MFIs and ROSCAs are more likely to be used by women. While on the one hand, MFIs are therefore compensating for women's more limited access to the formal sector, the challenge of reversing this bias clearly remains.

## 6 M-PESA

We now review the factors most associated with M-PESA use—see Table 4.

Unsurprisingly, owning a phone or having access to one have the biggest marginal effects associated with use. While the association with owning a phone is obvious, it is not entirely clear why having access to one presents such a strong effect since the association here is with

registered M-PESA use rather than simply use—which may be via others phones. This may arise from having a SIM which is used in another’s phone but the size of the effect remains slightly surprising.<sup>26</sup>

Table 4: M-PESA use, probit regression results

VARIABLES	2009		2009	
	Model 1		Model 2	
	MPESA-all		M-PESA	
	registered		only	
	users			
Rural	-0.072	***	-0.002	**
Female	-0.014		-0.001	
Single	0.019		0.002	**
Divorced	0.003		-0.001	
Widowed	0.009		-0.001	
Age Exact	0.001		-0.000	
Age Squared	-0.000		0.000	
Educ - primary	0.029		-0.001	
Educ - secondary	0.114	***	-0.000	
Region - Central	0.017		-0.002	***
Region - Coast	-0.085	***	-0.001	**
Region - East	0.002		-0.001	**
Region - Nyanza	-0.012		-0.001	**
Region - Rift	0.024		-0.000	
Region - West	0.020		-0.002	***
Region - NE	-0.069	**	-0.000	
Income - transfer	-0.014		0.002	*
Income - empl agric	0.020		0.005	***
Income - domestic	0.019		0.002	
Income - govt	0.064	**	-0.002	***
Income - pvt sector	0.055	***	-0.000	
Income - own business	0.032	**	-0.000	
Income - inv/sublet	-0.002		0.000	
Housing - permanent	0.011		0.002	*
Housing - semipermanent	0.009		0.002	
Housing - traditional	-0.026		0.001	
Radio	0.049	***	0.001	
TV	0.046	***	-0.001	*
Bicycle	0.005		0.001	*
Car	-0.058	***	-0.001	*
Own phone	0.522	***	0.502	***
Access phone	0.194	***	0.551	***
Log expenditure	0.025	***	-0.001	***
Observations	6315		6315	
Pseudo R2	0.4345		0.2124	

<sup>26</sup> In fact this has been a feature of a number of the 2009 regressions for SACCOs, MFIs and ROSCAs. That is, that access to a phone compared to no phone at all is positive and significant. This may be because it now reflects that there is a phone owned by family or friends and therefore having no access to a phone at all is now a much clearer feature of poverty in terms of lack of social connections.

M-PESA use is also strongly associated towards those with secondary education, though not primary. Age is not significantly associated with use at all which contrasts strongly with all other services examined above. The mean age of registered M-PESA users was 32.5 years compared with 37 years for bank users, suggesting this service does indeed reach a younger clientele.

As a mobile-based service, it might be expected that this would overcome the problems of rurality and distance. However, the proportion of urban dwellers using it was 51.4%—more than double rural use at 21.4%—and marginal effects indicate that rural location is associated with a negative and significant marginal effect. Use in Nairobi is almost double that of any other region with Central and Rift Valley following with higher than average use, while those located in North Eastern use the service least. Coast and North Eastern Provinces were both associated with negative marginal effects on the probability of use.

In terms of employment however, patterns are again similar to banks with those employed in government, the private sector or their own business associated with significantly stronger marginal effects compared to those who are employed in farming and fishing. However, the negative marginal effects associated with those in more precarious forms of employment—those who undertake domestic chores, employment in agriculture or are dependent on transfers—are in this case missing. Although, level of expenditure still had a significant and positive effect on use, this effect was about a third the size of the level for banks and SACCOs, suggesting it is relatively less important for this service. A higher proportion of men use the service than women, and this produces a negative but not significant coefficient. Interestingly a higher proportion of single people than the average use it.

These findings, suggest that M-PESA has some similar strongly positive associations as the services discussed above in relation to employment, education and urban people—especially Nairobi. But the effects are reduced for age and gender in particular.

Given the extensive discussion of the ways in which M-PESA is expected to promote financial inclusion, we examined the proportion of M-PESA users who were not using any other formal, semi-formal or informal service.<sup>27</sup> 5.8% of the population were using M-PESA ‘only’—Table 4, column 2. Here access to a phone overtakes ownership of a phone compared to no phone as the largest marginal effect, while all other marginal effects are very small.<sup>28</sup> However, there are some significant effects that may be important. In particular the marginal effects for all Provinces are negative and most are significant, relative to the Nairobi base suggesting that users are more likely to be Nairobi based than elsewhere. This still urban bias is also supported by the still negative coefficient on rurality. On the other hand, results on government employment (relative to farming and fishing) and owning a TV are reversed from significant positive to significant negative (Table 4, Column 1) and the sign of the marginal effect for expenditure is also reversed, while secondary education is no longer significant. These results suggest that M-PESA use is less biased than the ‘all-users’ results indicate, and that it may in fact be overcoming barriers to entry for some users. Since M-PESA has continued to expand considerably it is to be expected that newer users are less likely to have these characteristics.

<sup>27</sup> Here we used the FinAccess categorisations of formal, semi-formal and informal which are used to define access strands. Hence those we included here might be using one of the following services: savings in a secret place; savings kept by family; loan from family or friend; club or loyalty card.

<sup>28</sup> We should note that this regression did not produce especially robust results, largely because the sample of positive observations from which it was making estimates was quite small.

Overall, then the data available here suggests that M-PESA has a very different age profile of access but the extent to which it is overcoming other barriers to access is only tentatively suggested at this stage.

## 7 Conclusions

This paper has argued that the policy emphasis on inclusion needs to have at its heart an understanding of the causes of exclusion. Charting routes to inclusion needs to go beyond outreach related to levels of income, to understand the means through which exclusion takes place. These causes are complex and can arise from the interaction of a number of dimensions of service delivery: discriminatory policies; informational and contractual frameworks; and pricing and product characteristics. Underlying aspects of social difference can indirectly as well as directly produce exclusion. Hence we have examined patterns of exclusion through the analysis of socio-economic, demographic and geographic factors associated with access, although these may point to underlying constraints rather than directly reflect them.

Financial service provision in Kenya has undergone significant change in the period since 2005. Equity Bank led a shift in the approach to provision to the low-income market and M-PESA has seen an unprecedented rate of adoption. We have therefore analysed patterns of access to financial services in Kenya to examine whether these have constituted a transformational shift in provision. However, on the basis of these datasets the key factors associated with inclusion and exclusion confirm studies elsewhere and are little changed. First, we found that despite the growth of banking outreach, the factors associated with access remain largely unchanged as certain types of employment (government, private sector), higher levels of education, higher age, along with asset indicators produce increased probabilities of use, whereas rurality and gender are more clearly now negatively associated with use. The main change is to regional patterns of access which reflects a growth in bank branches. While emphasis on transactions costs tends to suggest that distance might be a key determinant of access, we find that only when travelling time exceeds one hour does this become an important factor. Overall, this suggests that the expansion has been concentrated on those who had similar characteristics to the banked in 2006 but were not in fact using them. The implication of this is, if anything, that the barriers to access are now more evident than they were in 2006.

Second, among semi-formal services, the use of savings and credit cooperatives (SACCOs) has fallen by a third, whereas use of microfinance institutions (MFIs) has doubled from a low base. In the latter case, we find that the association with women and owning a business has strengthened while that with age is unchanged again suggesting the entrenchment of these services with particular users. However, the association with education has reduced which appears to be a more inclusive development.

Informal services in the form of rotating savings and credit associations (ROSCAs) are more widely used in Kenya than banks, and have remained so in the last three years. Their use is positively biased towards women, those with their own phones and own businesses and are intriguingly now more biased towards those who are educated to secondary level than they were in 2006. This suggests that informal services are, to a degree, complementary rather solely competing with formal and semi-formal services at this stage of financial sector development.

Further, the factors associated with M-PESA usage are similar to those for bank use, except that age is not associated with use. This suggests that—up to 2009—it had not substantially overcome key barriers to inclusion. However, analysing the characteristics of those who only use M-PESA does indicate some differences and suggest that it is able to reach a more diverse range of users and hence that some of these barriers to inclusion may be being overcome as the service expands further. But as a money transfer service, M-PESA is currently more of a complementary service to core banking services than a substitute. Hence a key question remains as to whether and how this complementarity can be harnessed to enhance access given that the core financial services exhibit strong entry barriers. Evidence of transformation is as yet still rather tentative.

While money transfer is undoubtedly an important service—as its rapid take up has demonstrated—the policy implication of these findings is that a revolution in service delivery is still needed if the 80% who are unbanked are to be reached with formal financial intermediation services. Long term factors are at work which—on the evidence here—can be expected to improve access. Free tuition for secondary education was introduced in 2008 and by expanding this group will set a better stage for improved access in the future. Moreover, the return to a stronger GDP growth path in 2010 of some 5% (Central Bank of Kenya 2010) is likely to extend formal employment opportunities and include people through this route. But Kenya will undoubtedly have a significant population in self-employment, casual work and the informal sector for the foreseeable future. Inclusion for them is certain to require dramatically lower transactions costs and it is to be hoped that technological developments are setting the scene for these. Policy change has also taken place in 2010 to allow for agency banking which will allow banks to establish agents operating outside branches and are expected to lower the transactions costs of physical access. However, understanding of how elements of price, product design, information, contracts and institutional policies interact with each other and social difference to produce these patterns of access are as yet not well understood. Moreover, policies for financial inclusion must also recognise the hurdles that the history and political economy of the banking sector (Brownbridge 1998; Johnson 2004b) present in terms of trust for example. A transformation in access—both in Kenya and elsewhere—is therefore likely to require considerable innovation and creativity in both product and institutional design. Government policy may operate both in terms of intervention and the enabling environment. Government to person (G2P) payments are a means through which Kenya is experimenting with reaching the some of the most marginalised and excluded in the north through the Hunger Safety Net programme. This programme is making transfers through accounts which offer a means to financial inclusion rather than payments alone (Pickens, et al. 2009). Such experimentation through government programmes of this type is welcome and avoids the main pitfalls of past approaches to subsidy. The environment for innovation will also be critical. The Central Bank's approach to M-PESA's emergence was to understand and manage the real risks rather than be too conservative (Stone, et al. 2010). Through M-PESA's success this has now led to a hub of related technology and product developments in Kenya and is hopefully a prescient precedent.

International donors can also support these developments through facilitating innovation with smart subsidies and providing technical advice and support to the development of the enabling environment. The Financial Sector Deepening Trust in Kenya has been such a case having adopted a systemic market development approach (Stone, et al. 2010). Additionally there is

scope for promotion of services based on informal models. Some donors have promoted independent savings groups which operate as ASCAs (Allen and Panetta 2010). Though, as this evidence here shows, these informal models face challenges in reaching men as well as women, they have the potential to reach large numbers with a savings and loans service at relatively low cost. Because they promote the technology and then leave and do not involve ongoing subsidy, they offer an additional approach to the goal of financial inclusion.

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